

CLAIMS

1. A system for injecting into a fiber signals from multiple sources at different wavelengths, the system comprising:

5 - a first signal source,
 - a first circulator with a first input connected to the first source,
 - a second signal source, and
 - a second circulator with a first input connected to the second signal source via reflector means for reflecting signals from the first source, a second input supplying the signals from the first and second signal sources, and a third input connected to a second input of the first circulator.

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15 2. A system according to claim 1, further including:
 - a third signal source, and
 - a third circulator with a first input connected to the third signal source via reflector means for reflecting signals from the first source and the second source, a second input supplying the signals from the first, second and third signal sources, and a third input connected to the second input of the second circulator.

20 3. A system according to claim 2, further including:
 - an nth signal source,
 - an nth circulator with a first input connected to the nth signal source via reflector means for reflecting signals from sources of rank less than n, where n is an integer varying from 4 to M and M is the total number of sources injected, a second input supplying the signals from the signal sources of rank 1 to n, and a third input connected to the second input of the circulator of rank n-1

25 4. The system claimed in claim 1, wherein each of the signal sources comprises a pump.

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5. The system claimed in claim 1, wherein the reflector means comprise Bragg gratings.

6. An amplifier comprising a system according to claim 1 for injecting pump signals and an amplifier fiber connected to the second output of the highest rank circulator.

7. An amplifier according to claim 6, wherein the amplifier fiber is a line fiber.

8. An amplifier according to claim 6, wherein the 10 amplifier fiber is not a line fiber.

9. An amplifier according to claim 6, wherein amplification is effected in the amplifier fiber by stimulated Raman scattering.

10. A fiber optic transmission system comprising an 15 amplifier according to claim 6.

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